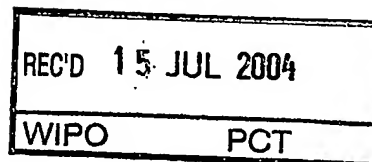


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## CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Provisional Specification as filed on 19 December 2003 with an application for Letters Patent number 530270 made by BOARD & BATTEN INTERNATIONAL INC.

Dated 7 July 2004.

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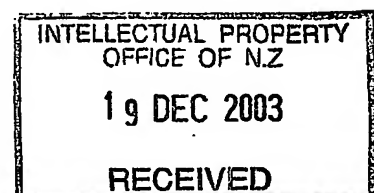
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PROVISIONAL SPECIFICATION

TRAMPOLINE ENCLOSURE

We, BOARD & BATTEN INTERNATIONAL INC., c/- International Management Services Ltd., Harbour Centre 4<sup>th</sup> Floor, North Church Street, Georgetown, Cayman Islands, do hereby declare this invention to be described in the following statement:



## **TRAMPOLINE ENCLOSURE**

### **FIELD OF THE INVENTION**

The present invention relates to an enclosure for a trampoline that provides a rebounding surface in addition to the trampoline surface.

### **BACKGROUND TO THE INVENTION**

Enclosures have been developed and sold to contribute to the safety of conventional trampolines. Such enclosures for a conventional trampoline are shown in Figure 1 and Figure 2. These enclosures are primarily designed as a safety device to prevent users falling from the trampoline. They are not suitable for users to deliberately bounce against them for play purposes. The enclosures are generally fairly rigid in nature, and in particular the upright poles 1. Should a user deliberately jump into the enclosure, they could hit a rigid pole 1 and/or the outer horizontal frame that supports the trampoline mat. Both types of contact could result in injury to the user.

### **SUMMARY OF THE INVENTION**

It is an object of the invention to provide a trampoline enclosure that provides a rebounding surface.

In one aspect the present invention may be said to consist in a trampoline enclosure adapted to be installed a soft edge trampoline including: a plurality of resilient rods for attaching to the trampoline, and an enclosure wall for attaching to the rods and to, or in proximity to, the perimeter of the trampoline mat.

Preferably, in one form, the rod is made from pultruded fibreglass.

Preferably, in another form, the curtain is netting.

Preferably, in a further form, the top of the curtain includes pockets for attaching the curtain to the top of the rods. Preferably the rods have ball endings. Preferably, the pockets extend substantially the length of the rods.

In another form, the top of the curtain preferably includes fittings to capture the ball end of the rods. Preferably, the fittings are sewn into the top of the curtain.

In another form, the rods are preferably attached to the trampoline at a location on the frame or the legs of the trampoline. Preferably, the attachment is a socket connection. Preferably the bottom of the curtain has a band with holes for connection of the curtain to the spring rods of the trampoline near the trampoline mat.

The enclosure may be supplied in component form as a kit, or preassembled, for attachment to the trampoline.

In another embodiment the present invention may be said to consist in a soft edge trampoline with an enclosure, the enclosure including: a plurality of resilient rods attached to the trampoline, and an enclosure wall attached to the rods and to, or in proximity to, the perimeter of the trampoline mat.

Preferably, in one form, the rod is made from pultruded fibreglass.

Preferably, in another form, the curtain is netting.

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### **BRIEF DESCRIPTION OF THE DRAWINGS**

Preferred embodiments of the invention will be described with reference to the accompanying drawings, of which:

Figures 1 and 2 show conventional enclosures on conventional trampolines,

Figure 3 shows a soft edge trampoline,

Figure 4 shows an enclosure according to one embodiment of the invention installed on a soft edge trampoline,

Figures 5 ,6 and 7 show attachment of the support rod sockets,

Figures 8 and 9 show the attachment of the support rods to the pockets on the curtain,

Figures 10 and 11 show the attachment of the support rods to a cleat in the curtain,

Figure 12 shows a the assembly of long curtain pockets for the support rods,

Figures 13 and 14 show the attachment of the trampoline rods to the bottom of the curtain,

Figure 15 shows an opening in the enclosure wall,

Figure 16 shows the trampoline in use,

Figure 17 shows an example construction of a support rod joiner,

Figure 18 shows a higher placement of the support rod joiner,

Figures 19A and 19B show the affect of using a central joiner, and

Figures 20A and 20B show the affect of placing the support rod joiner higher.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS**

The present invention relates to an enclosure for the particular type of trampoline that uses flexible cantilevered rods for springs. An example of such a trampoline is shown in Figure 3 and as further described in US Patent No. 6,319,174. This type of trampoline has a soft and resilient outer edge, with the rigid frame tucked away underneath, providing a potentially safer jumping environment than a conventional trampoline where the steel frame is around the edge and can be hit by a user.

The enclosure according an embodiment of the invention is adapted for use with the trampoline in Figure 3 is shown installed on the trampoline in Figure 4. It comprises flexible/resilient poles or rods 3 attached at one end to the trampoline frame 4 that extend vertically. A net curtain 5 or similar is attached to the poles 3 near the top 6 and also near the trampoline mat in a manner to be described with reference to Figures 13 and 14. The enclosure may come supplied with the trampoline, or separately, and may be factory fitted, or retrospectively self fitted. It may come in component form as a kit, or preassembled for attachment to the trampoline. This provides an enclosure that is specifically designed to function as a play addition to the soft-edged trampoline. The particular combination of

- (a) the soft-edged trampoline and
- (b) enclosure, and
- (c) supported by flexible/resilient rods is

uniquely suited to the use of the enclosure in trampoline play because a jumper hitting the enclosure wall and falling on the trampoline edge is in no danger of injury as the

trampoline edge is soft and designed for such an event. As the trampoline frame is underneath the trampoline matt, the frame will not be hit when rebounding off the enclosure wall. Also the flexible rods are both difficult for the jumper to hit and readily move on impact so as not to cause injury.

This is in contrast to conventional trampolines with enclosures such as in Figure 1 and 2, where the enclosure is designed purely for safety. On a conventional trampoline, if a jumper impacts the enclosure wall and falls they land on the steel frame of the trampoline or at least the padded covering 2. Equally if they hit a support pole 1 it is relatively rigid. They are therefore not suited to using the enclosure for play, and are designed as safety features.

A possible embodiment of the enclosure also provide an enclosure net 5 with a substantially vertical, robust and resilient impact surface of sufficient strength to bounce a person back on to the trampoline. It also provides flexible support rods 3 (as shown in Figure 4) that

- (a) Are preferably removed from the curtain surface 5 as to be difficult to hit,
- (b) That are so flexible as to not cause injury when they are hit from the side,
- (c) That are so flexible as to not cause injury if landed on from above and
- (d) Provide enough tension to the net to give the required rebounding response to the jumper hitting it.

Mounting methods for the support rods can include socket connections, where the sockets receive the end(s) of the enclosure rod. The position and orientation of the socket may be, in one embodiment, clamped on to the trampoline frame as shown in Figure 5. The socket 7 includes a bracket portion for attachment to the frame 4. The bracket can be attached to the frame 4 using for example a hose clamp. The bracket may be shaped to conform to the curve of the frame and to fit between the sockets, to ensure the bracket is secured adequately when attached to the frame 4.

Alternatively, in another form, the socket 7 may be clamped to the leg of the trampoline, as shown in Figure 6. Again, the socket 7 may include a bracket for attachment to the trampoline leg. In the example shown in Figure 6, a U-shaped bracket secures the socket 7 to the trampoline leg.

Further, in another form, the sockets 7 for the enclosure rods 3 could be made integral with the trampoline frame 4. As shown in Figure 7, the socket 7 is set to be within the frame, much like the sockets for the flexible rod spring members. This form allows a simpler production since there is no need for attachment brackets. Also, since the socket 7 is within the frame, the stability and strength of the socket 7 is improved from the designs in Figures 5 and 6.

To allow the rods 3 to bend under impact, the socket could be set at an angle from vertical. The sockets 7 shown in Figure 5 to 7 show such an angle.


The enclosure also provides the safety function achieved by conventional trampoline enclosures and can be assembled on a soft edged trampoline.

Further features may be provided for the trampoline enclosure as described above. For example, support rods 3, acting like fishing rods, are set to hold up and tension the upper edge 6 of the enclosure net adequately for the play function. The higher the tension in the support rods 3, the more rebound capability the enclosure net 5 has. In other words, where there is a need to provide a netting 5 with a high rebound capability, high tension rods 3 could be employed.

Another optional feature could be providing enough support rods 3 to produce an enclosure that does not intrude over the jumping surface. In Figure 4, twelve rods are used to achieve this.

The enclosure net 5 could include inverted pockets 8 in the top edge 6 to engage and retain the tops of the support rods 3, as shown in Figures 8 and 9. The inverted pockets






8 may be sewn onto the top edge of the enclosure net 5. Additionally, support rods 3 could be fitted with a ball-shaped edge 9 to both engage the inverted pocket 8 and prevent the rod 3 from penetrating the net inverted pocket 8, especially on impact, as shown in Figures 8 and 9.

In a further form, the inverted pockets 8 may be replaced with fittings 10 that engage the ball-shape end 9 of the rod 3. An example of the fitting is shown in Figure 10. The fitting 10 could be a cleat that includes a socket cavity to receive the ball-shape end 9 of the rod 3 to form a pivotable connection. To ensure the fitting 10 itself is secured to the net top edge 6, the fitting 10 could be sewn into the net top edge 6. A hole is provided in the net top edge 6 to allow the ball-end 9 of the rod 3 to connect with the fitting 10.

In an optional arrangement, a clip cleat 10 is provided. A cut-away view of the clip cleat 10 is shown in Figure 11. The clip cleat 10 provides a latch-like clip 11 to retain the ball-end 9 in the socket cavity. With this arrangement, the rod 3 will not dislocate out of the cleat even if the trampoline user was to pull on the rod 3. To release the ball-end 9, the user will have to move the clip 11 downward before pulling the rod 3 out. This arrangement thus provides a greater safety feature of preventing accidental dislocation of the support rods 3.



In another optional arrangement, the inverted pocket 8 could be a long pocket 8 hanging from the top edge 6, covering the support rod 3. An example is shown in Figure 12. The advantages of this include additional safety against the rod 3 springing loose from the top edge 6 during an impact, and injuring a bystander: the rod 3 is fully contained in the long pocket 8. If the long pocket 8 is lined with a soft material such as foam, this can reduce any impact injury. Also, the long pocket 8 prevents a bystander from pulling the rod 3 down and out of the top socket, because the pocket has to be pulled at the same time.

Furthermore, the enclosure net 5 may have sewn into the bottom edge a band 12 of plain material (in this case PVC fabric) with holes for engagement on the trampoline rods 3 as shown in Figures 13 and 14. Cleats may secure the trampoline rods to the band 12.

The enclosure net may also have a second bottom edge band 13 or flap of plain material sewn around the inside at the bottom, to form a flap that covers the gap between the net and the edge of the mat.

The enclosure net may also incorporate a door 14 which may be a flap sewn into the net, hung from its top edge and which seals around its edges with Velcro, as shown in Figure 15.

As previously described in the above preferred embodiments, flexible support rods 3 are used to support the enclosure net 5 to provide both safety and play functions. As shown in Figure 16, the flexible support rods 3 must be long enough to support, with tension, the height of the enclosure net 5. At the same time, the flexible support rods 3 must possess the strength to withstand the forces involved when the enclosure is used. For various reasons, the flexible support rods 3 are not manufactured as a single extruded rod, but are preferably a combination of multiple interjoined flexible support rods.

In one form, two flexible rods combine at substantially the centre point of the enclosure net 5. To ensure the secure coupling of the two flexible rods, a central joiner is provided. Referring to Figure 16, the central joiner is shown as 15.

Figure 17 shows one simple form of the central joiner 15. For a seamless connection, the central joiner 15 is shown to have substantially the same cross-sectional dimension as the flexible rods. On each end of the central joiner 15, a hollow passage 16 is provided. The passage 16 will receive an equivalently dimensioned protrusion 17 on the flexible rods. The protrusion 17 of the flexible rod could be attained by machining (e.g. using a lathe) the flexible rod end. Alternatively, the protrusion 17 could be formed during the extrusion of the flexible rods.

In an alternative form of the flexible support rod 3, the joiner for the individual flexible rods could be set higher along the length of the flexible support rod 3. An illustration

of this form is shown in Figure 18. Shown as joiners 18, the relative difference in position when compared to the central joiners 15 is apparent.

The reasons for this alternative arrangement of the joiners 18 are to:

- (a) move the joiner away from a point where a jumper could hit it.
- (b) reduce the stress on the joiner.
- (c) use more convenient lengths of rod.

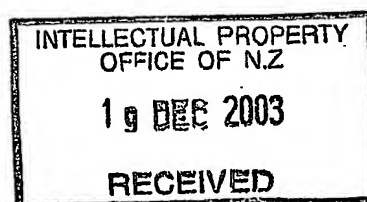
In a highly preferred embodiment, a long pocket 8, illustrated in Figure 12, receives the assembled support rods 3, such that the central joiner 15 or the joiner 18 is substantially covered by the long pocket 8. This prevents the support rods 3 from escaping from the central joiner 15 or joiner 18 and prevents the joiner becoming a projectile if the support rods 3 are pulled apart.

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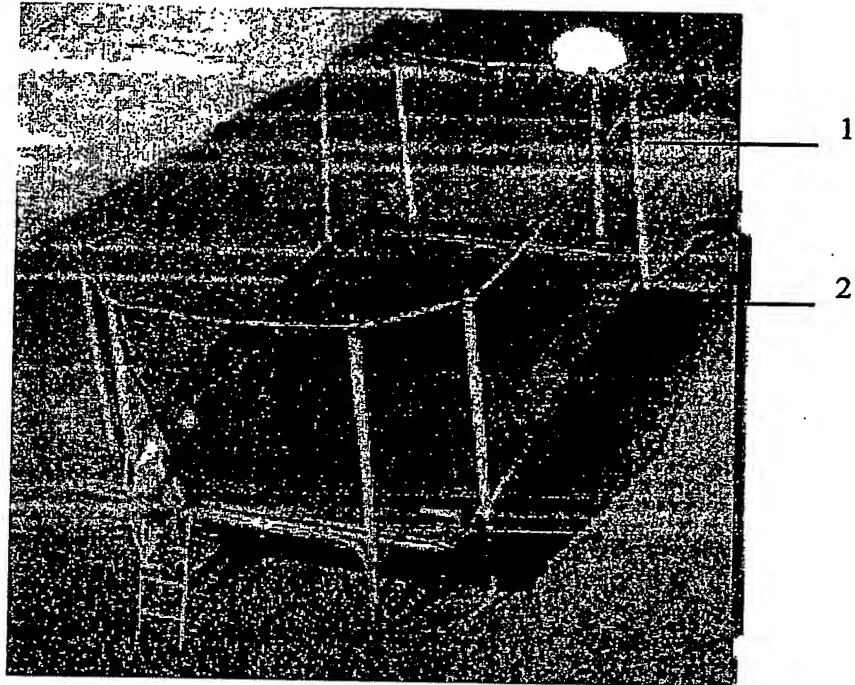


Figure 1

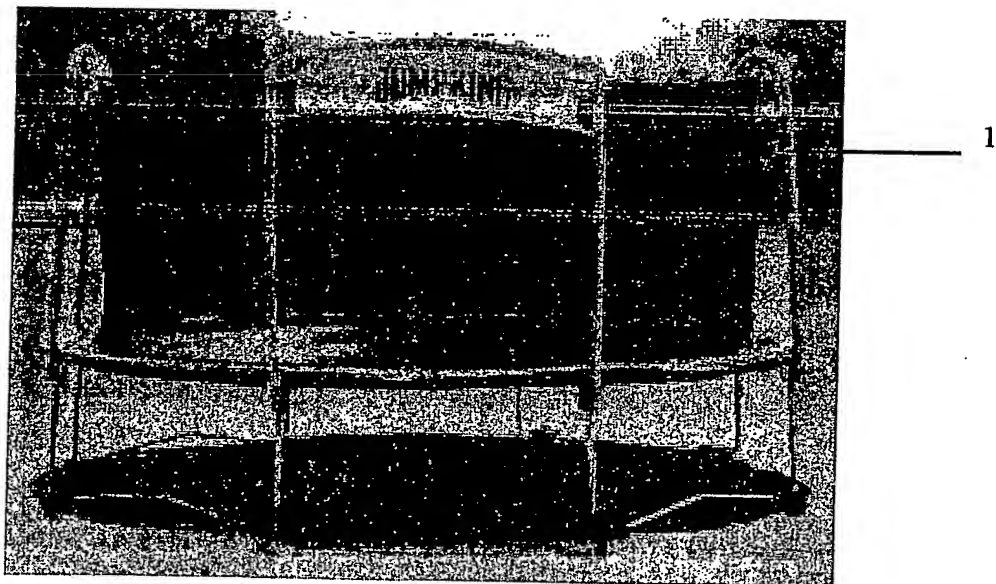


Figure 2

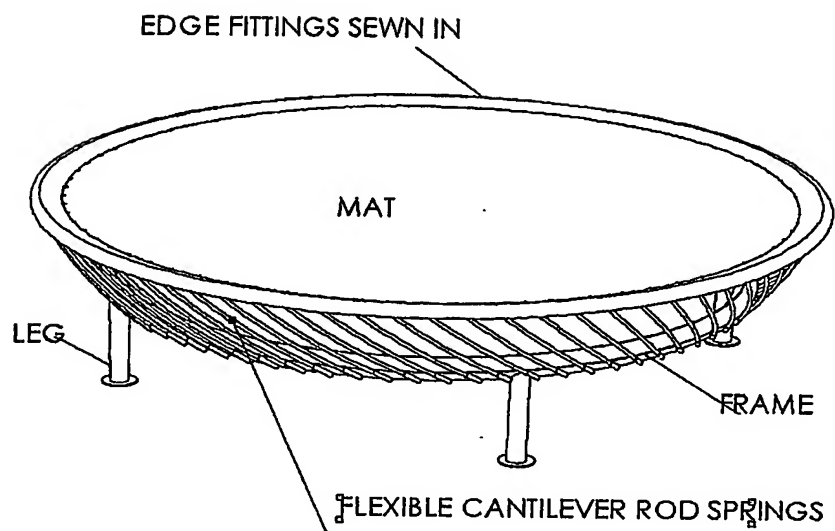


Figure 3

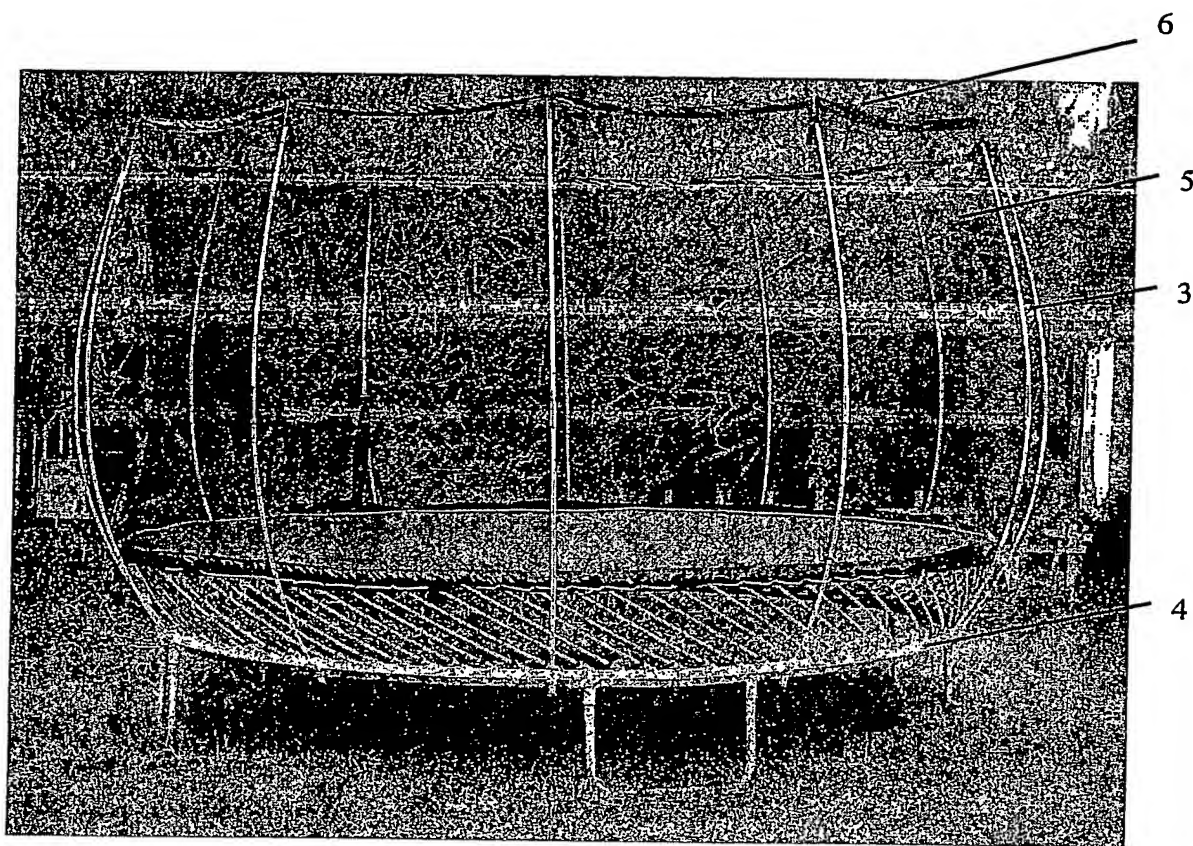


Figure 4

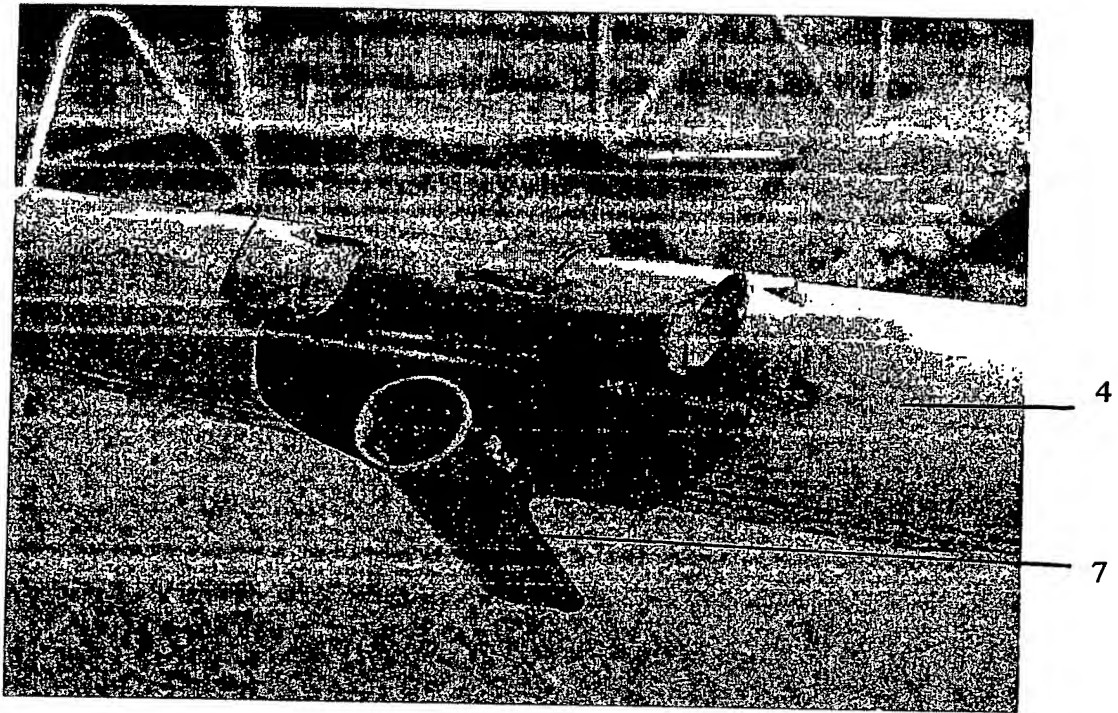


Figure 5

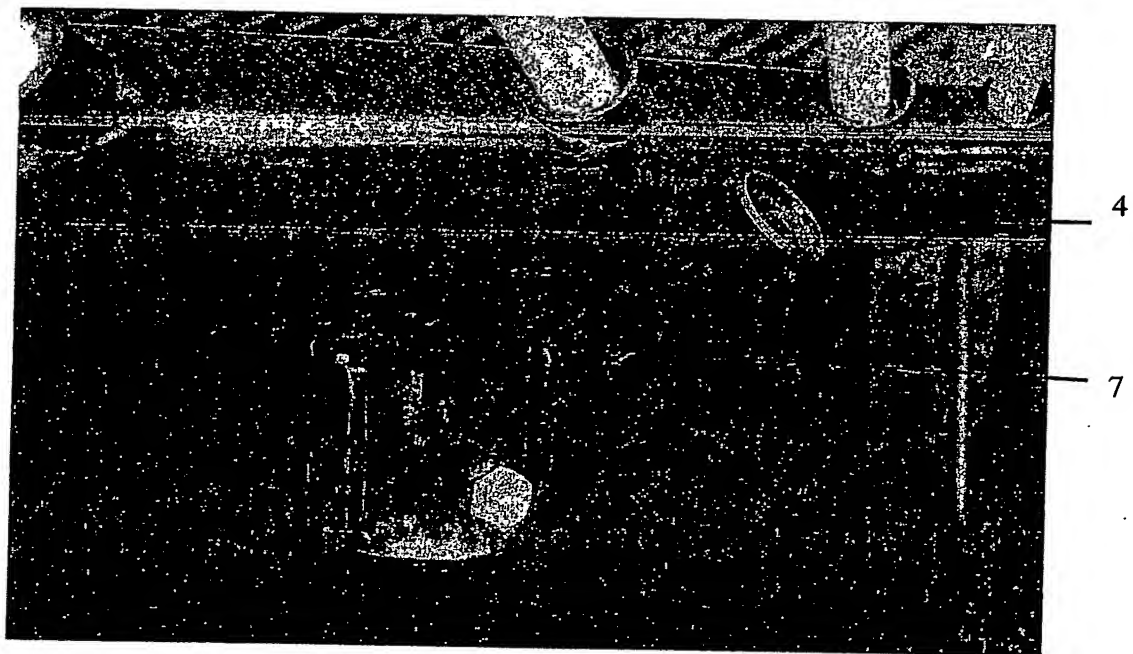


Figure 6

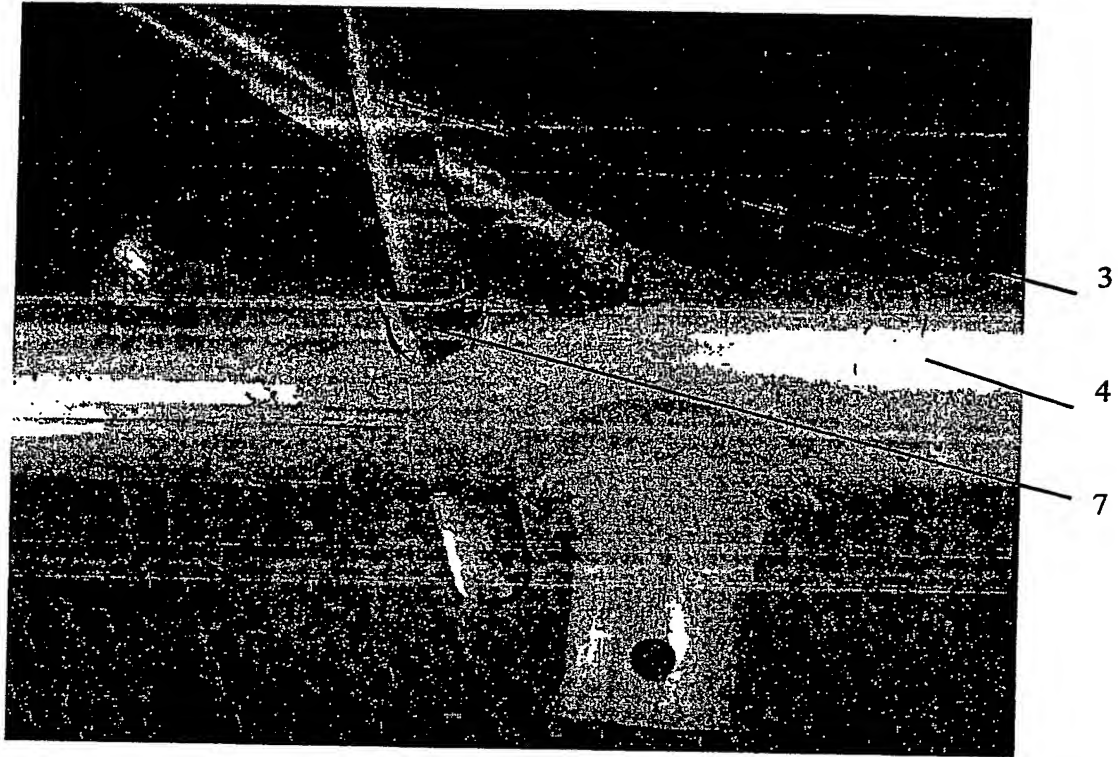


Figure 7

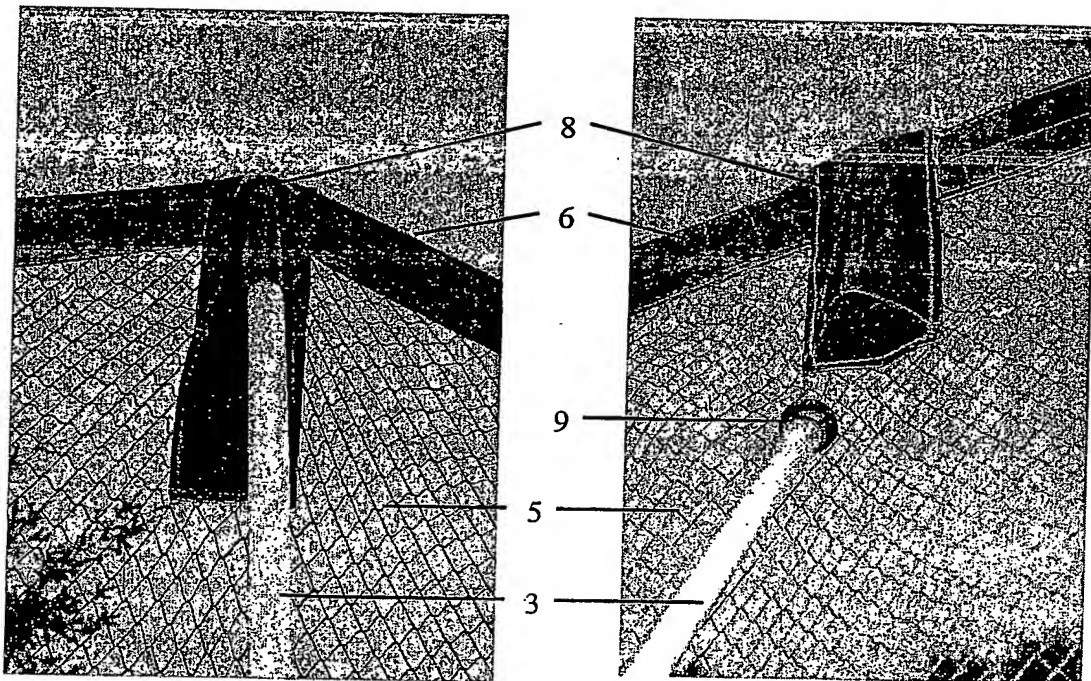


Figure 8

Figure 9



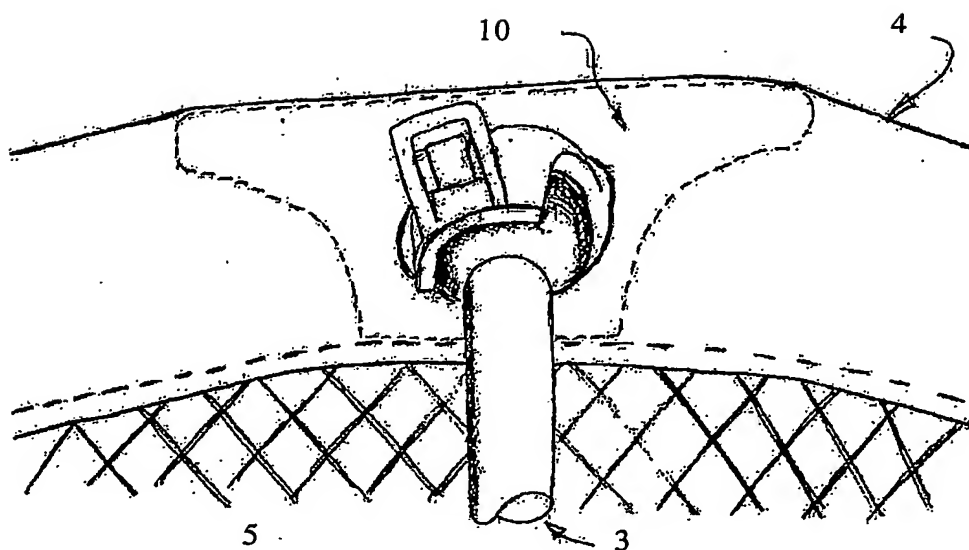


Figure 10

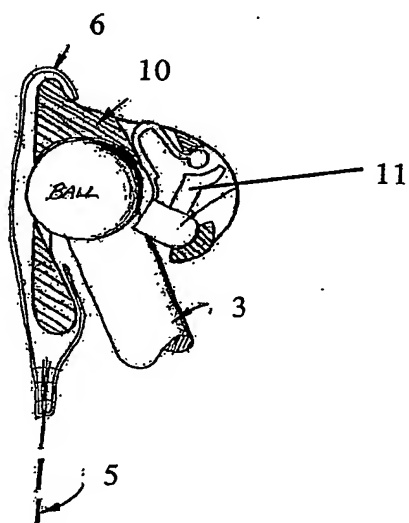


Figure 11



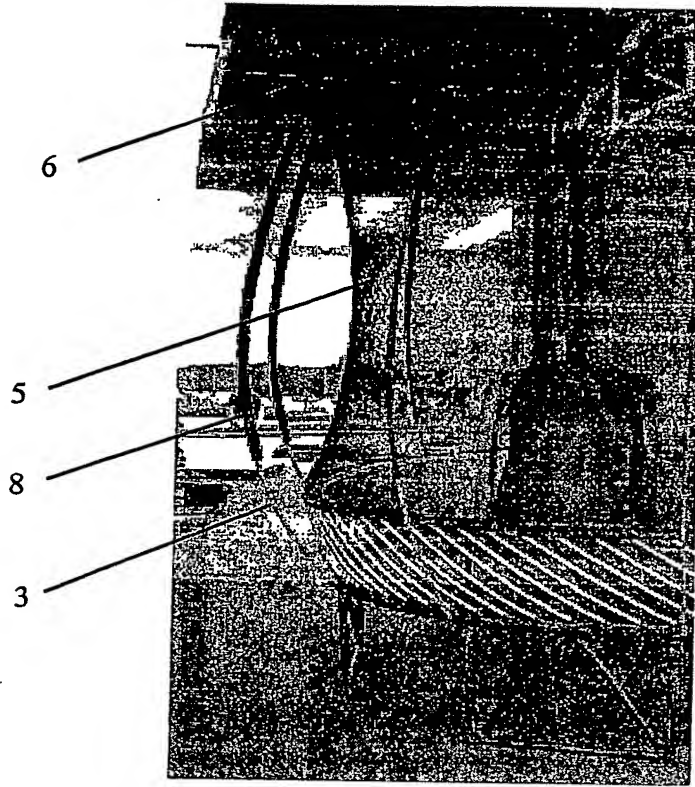


Figure 12

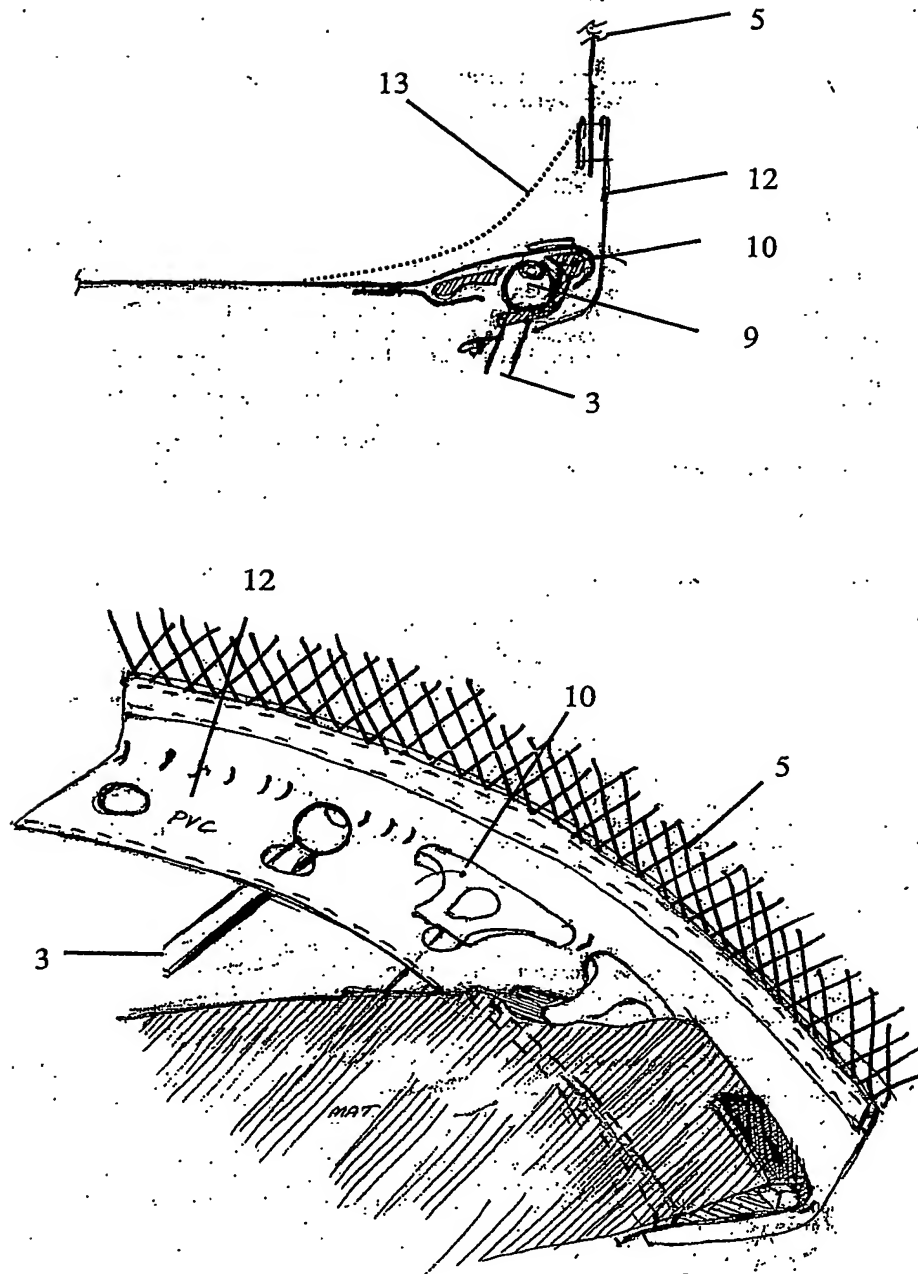


Figure 13

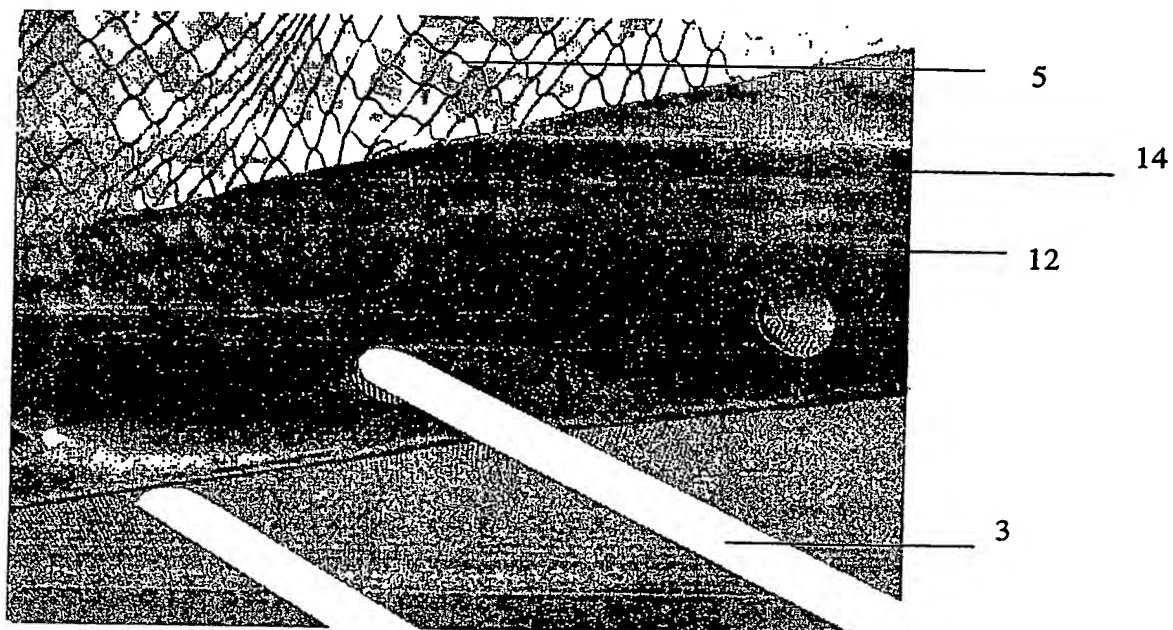


Figure 14

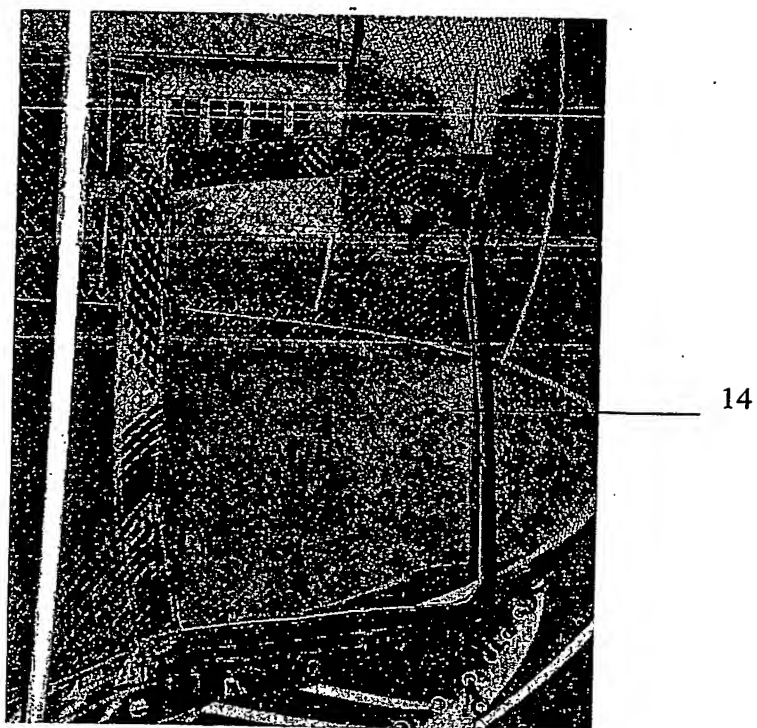


Figure 15

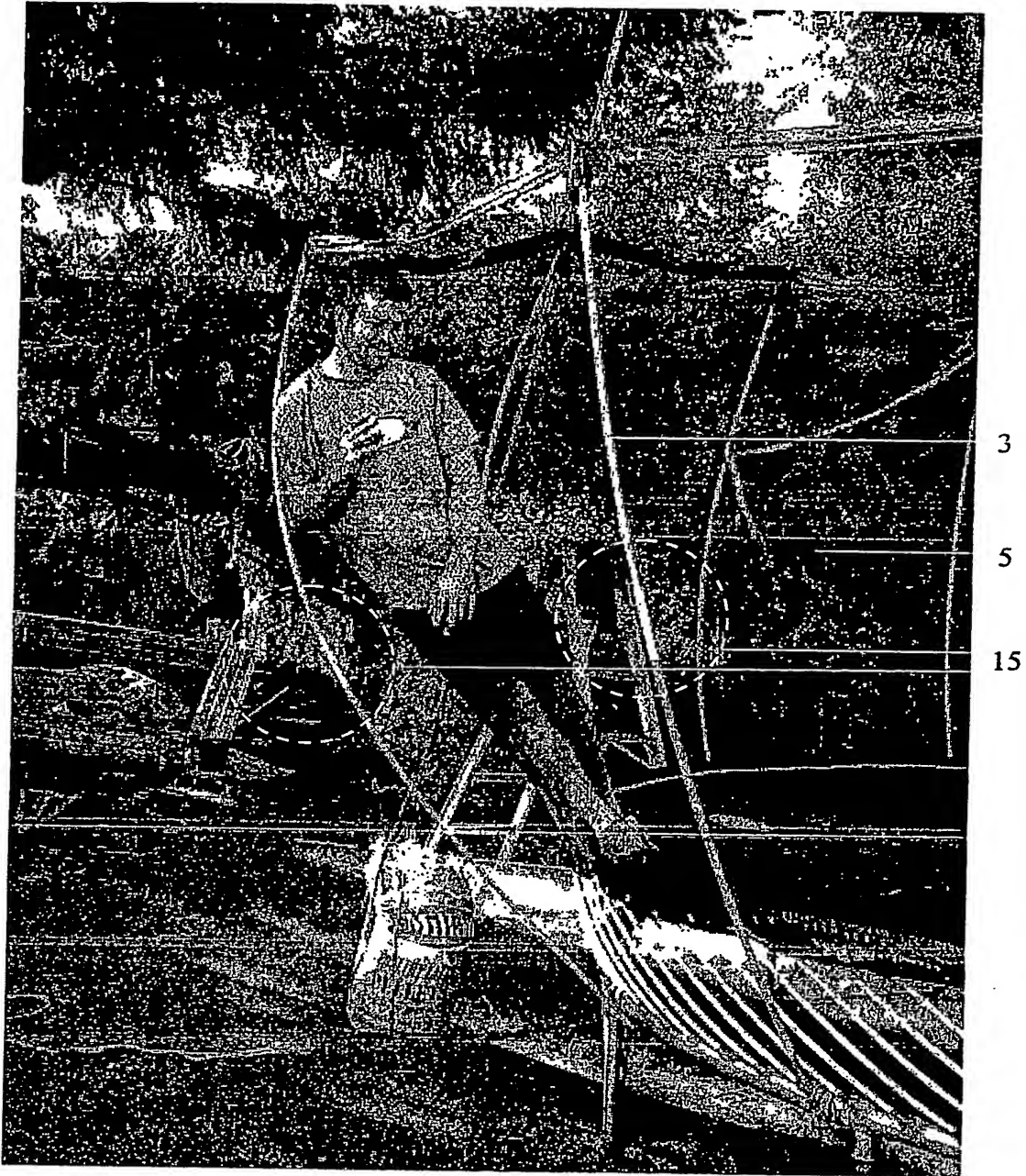


Figure 16

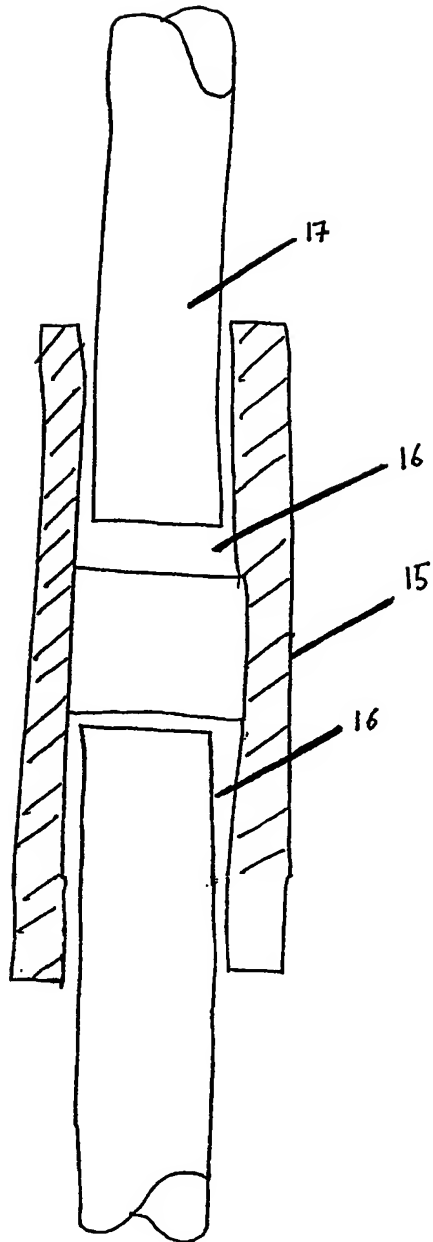


Figure 17

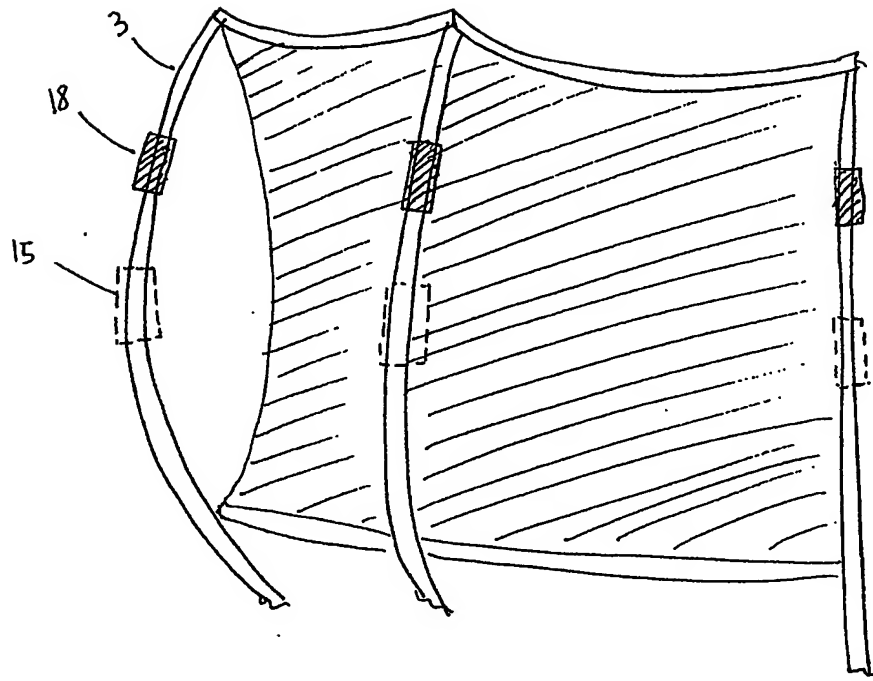


Figure 18

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